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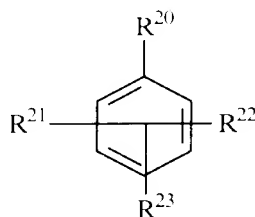
JCOO Reg'd PCT/PTO 07 MAY 2001

Yet, another advantage of the liquid bleaching compositions of the present invention is that said bleaching compositions are suitable for various laundry cleaning applications both when used in diluted conditions, e.g. as a detergent additive of a fully formulated laundry detergent composition, and when used in neat condition, e.g. as a liquid pretreater (spotter).

#### Summary of the invention

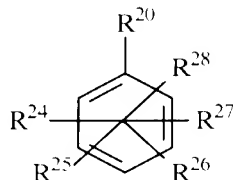
The present invention relates to a liquid cleaning composition comprising an oxidising agent and a radical scavenger which is selected from the group consisting of:

(i)



wherein  $R^{20}$  is the moiety  $-\text{COOM}$  or  $-\text{SO}_3\text{M}$ , wherein M is hydrogen or a metal;  $R^{21}$  and  $R^{22}$  are each independently hydrogen,  $\text{C}_1$ - $\text{C}_{10}$  linear or branched alkyl,  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1$ - $\text{C}_{20}$  linear or branched alkyl,  $-\text{COOM}$ ,  $-\text{SO}_3\text{M}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{NO}_2$ , and mixtures thereof;  $R^{23}$  is  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1$ - $\text{C}_{20}$  linear or branched alkyl.

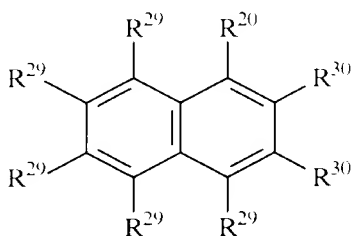
(ii)



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wherein  $R^{29}$  is the moiety  $-\text{COOM}$  or  $-\text{SO}_3\text{M}$ , wherein M is hydrogen or a metal;  $R^{24}$ ,  $R^{25}$ ,  $R^{26}$ , and  $R^{27}$  are each independently  $\text{C}_1$ - $\text{C}_{10}$  linear or branched alkyl,  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1$ - $\text{C}_{20}$  linear or branched alkyl,  $-\text{COOM}$ ,  $-\text{SO}_3\text{M}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{NO}_2$ , and mixtures thereof;  $R^{28}$  is hydrogen,  $\text{C}_1$ - $\text{C}_{10}$  linear or branched alkyl,  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1$ - $\text{C}_{20}$  linear or branched alkyl,  $-\text{COOM}$ ,  $-\text{SO}_3\text{M}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{NO}_2$ , and mixtures thereof;

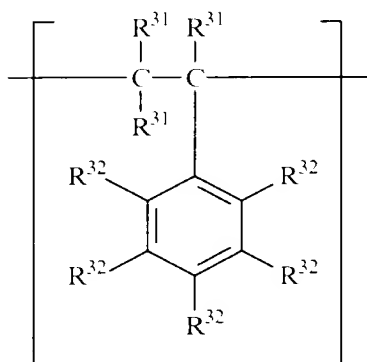
(iii)



wherein  $R^{29}$  is the moiety  $-\text{COOM}$  or  $-\text{SO}_3\text{M}$ , wherein M is hydrogen or a metal; each  $R^{29}$  is independently  $\text{C}_1$ - $\text{C}_{10}$  linear or branched alkyl,  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1$ - $\text{C}_{20}$  linear or branched alkyl,  $-\text{COOM}$ ,  $-\text{SO}_3\text{M}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{NO}_2$ , and mixtures thereof; each  $R^{30}$  is independently hydrogen,  $\text{C}_1$ - $\text{C}_{10}$  linear or branched alkyl,  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1$ - $\text{C}_{20}$  linear or branched alkyl,  $-\text{COOM}$ ,  $-\text{SO}_3\text{M}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{NO}_2$ , and mixtures thereof;

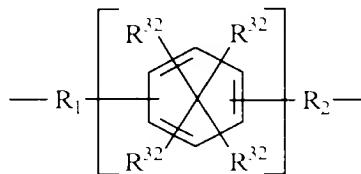
(iv) homopolymers or copolymers comprising units having the formula:

a)

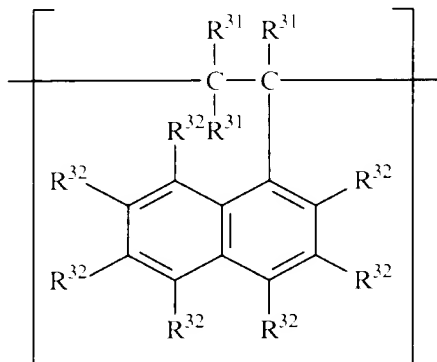


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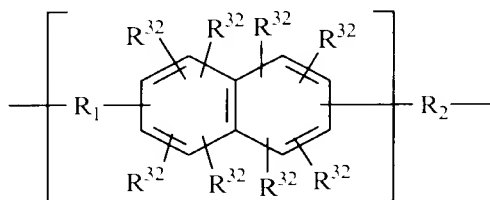
b)



c)



d)



wherein  $R^{31}$  is the moiety hydrogen,  $C_1$ - $C_{10}$  linear or branched alkyl,  $-OR'$  wherein  $R'$  is  $C_1$ - $C_{20}$  linear or branched alkyl,  $-OH$ ,  $-COOM$ ,  $-SO_3M$ ,  $-Cl$ ,  $-Br$ ,  $-NO_2$ , and mixtures thereof; wherein  $M$  is hydrogen or a metal; each  $R^{32}$  is independently hydrogen,  $C_1$ - $C_{10}$  linear or branched alkyl,  $-OR'$  wherein  $R'$  is  $C_1$ - $C_{20}$  linear or branched alkyl,  $-COOM$ ,  $-SO_3M$ ,  $-Cl$ ,  $-Br$ ,  $-NO_2$ , and mixtures thereof;  $R_1$  and  $R_2$  are each independently selected from  $-C(R^{31})_2-$ ,  $-CO-$ ,  $-C(O)O-$ ,  $-C(O)NH-$ ,  $-O-$ ,  $-N'(R^{31})_2-$ ;

(v) and mixtures thereof.

In a preferred embodiment the compositions of the present invention further comprise on or more surfactants and/or a brightener.

#### Detailed description of the invention

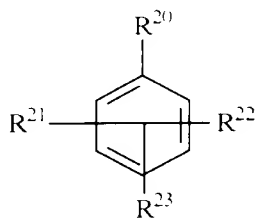
##### Liquid cleaning compositions:

The compositions according to the present invention are in liquid form. Preferably, the compositions of the present invention are thickened. Thickening can be achieved by the addition of thickening components for example surfactants, more particularly anionic surfactants. Preferably the compositions are in aqueous form. More preferably, they comprise water in an amount of from 60% to 98% by weight, more preferably of from 80% to 97% and most preferably of from 85% to 97% by weight of the total aqueous liquid bleaching composition.

##### Oxidising agent

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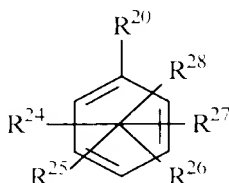
The radical scavengers of the present invention are described in four categories. The first category of radical scavengers (i) has the general formula:



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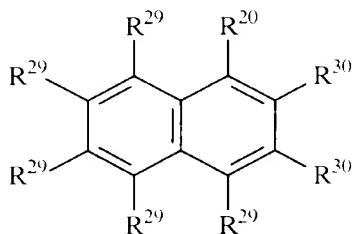
wherein  $R^{20}$  is the moiety  $-\text{COOM}$  or  $-\text{SO}_3\text{M}$ , wherein  $\text{M}$  is hydrogen or a metal;  $R^{21}$  and  $R^{22}$  are each independently hydrogen,  $\text{C}_1\text{-C}_{10}$  linear or branched alkyl,  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1\text{-C}_{20}$  linear or branched alkyl,  $-\text{COOM}$ ,  $-\text{SO}_3\text{M}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{NO}_2$ , and mixtures thereof;  $R^{23}$  is  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1\text{-C}_{20}$  linear or branched alkyl.

The second category of radical scavengers (ii) has the general formula:



wherein  $R^{20}$  is the moiety  $-\text{COOM}$  or  $-\text{SO}_3\text{M}$ , wherein  $\text{M}$  is hydrogen or a metal;  $R^{24}$ ,  $R^{25}$ ,  $R^{26}$ , and  $R^{27}$  are each independently  $\text{C}_1\text{-C}_{10}$  linear or branched alkyl,  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1\text{-C}_{20}$  linear or branched alkyl,  $-\text{COOM}$ ,  $-\text{SO}_3\text{M}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{NO}_2$ , and mixtures thereof;  $R^{28}$  is hydrogen,  $\text{C}_1\text{-C}_{10}$  linear or branched alkyl,  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1\text{-C}_{20}$  linear or branched alkyl,  $-\text{COOM}$ ,  $-\text{SO}_3\text{M}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{NO}_2$ , and mixtures thereof;

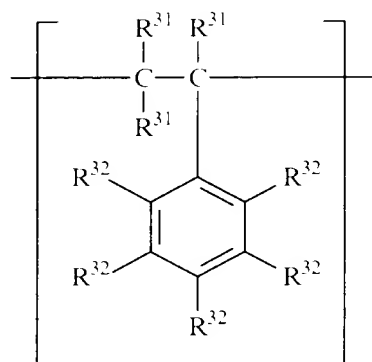
The third category of radical scavengers (iii) has the general formula:



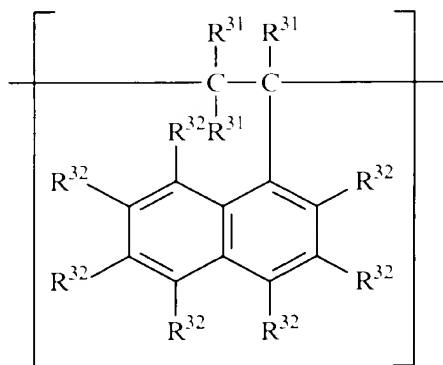
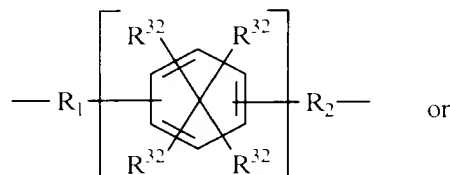
wherein  $R^{20}$  is the moiety  $-\text{COOM}$  or  $-\text{SO}_3\text{M}$ , wherein  $\text{M}$  is hydrogen or a metal; each  $R^{29}$  is independently  $\text{C}_1\text{-C}_{10}$  linear or branched alkyl,  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1\text{-C}_{20}$  linear or branched alkyl,  $-\text{COOM}$ ,  $-\text{SO}_3\text{M}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{NO}_2$ , and mixtures thereof; each  $R^{30}$  is independently hydrogen,  $\text{C}_1\text{-C}_{10}$  linear or branched alkyl,  $-\text{OR}'$  wherein  $\text{R}'$  is  $\text{C}_1\text{-C}_{20}$  linear or branched alkyl,  $-\text{COOM}$ ,  $-\text{SO}_3\text{M}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{NO}_2$ , and mixtures thereof;

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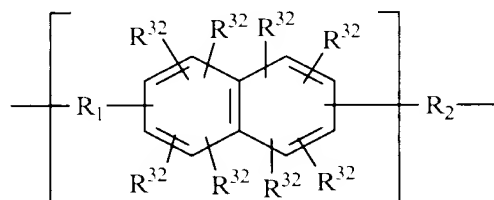
The fourth category of radical scavengers (iv) are homopolymers of copolymers comprising units having the formula:



or



or



wherein  $\text{R}^{31}$  is the moiety hydrogen,  $\text{C}_1\text{-C}_{10}$  linear or branched alkyl,  $\text{-OR}'$  wherein  $\text{R}'$  is  $\text{C}_1\text{-C}_{20}$  linear or branched alkyl,  $\text{-OH}$ ,  $\text{-COOM}$ ,  $\text{-SO}_3\text{M}$ ,  $\text{-Cl}$ ,  $\text{-Br}$ ,  $\text{-NO}_2$ , and mixtures thereof; wherein  $\text{M}$  is hydrogen or a metal; each  $\text{R}^{32}$  is independently hydrogen,  $\text{C}_1\text{-C}_{10}$  linear or branched alkyl,  $\text{-OR}'$  wherein  $\text{R}'$  is  $\text{C}_1\text{-C}_{20}$  linear or branched alkyl,  $\text{-COOM}$ ,  $\text{-SO}_3\text{M}$ ,  $\text{-Cl}$ ,  $\text{-Br}$ ,  $\text{-NO}_2$ , and mixtures thereof;  $\text{R}_1$  and  $\text{R}_2$  are each independently selected from  $\text{-C(R}^{31})_2\text{-}$ ,  $\text{-CO-}$ ,  $\text{-C(O)O-}$ ,  $\text{-C(O)NH-}$ ,  $\text{-O-}$ ,  $\text{-N(R}^{31})_2\text{-}$ .

Preferred radical scavengers are selected from the group consisting of 2,3,4,5 tetramethoxy benzoic acid; 2,3,4,5,6- pentamethoxy benzoic acid; polystyrene; polystyrene sulfonate, styrene: maleic acid copolymer; styrene: acrylic acid copolymer; styrene: ethylene glycol graft polymer; poly(ethyleneglycol) di-toluene sulfonate; poly hydroxy benzoic acid; polyhydroxy styrene; poly methyl styrene; polystyrene divinyl benzene; poly vinyl phenol; and mixtures thereof.

The compositions of the present invention comprise from 0.001% to 10% by weight of the total composition of a radical scavenger, or a mixture thereof.